

JOURNAL OF CELLULAR PHYSIOLOGY

COPYRIGHT © THE WISTAR INSTITUTE PRESS 1979

VITTORIO DEFENDI, *Managing Editor*

New York University Medical Center
Department of Pathology
550 First Avenue
New York, New York 10016

EDITORS

RENATO BASERGA
Temple University

P. I. MARCUS
University of Connecticut

E. A. McCULLOUGH
University of Toronto

P. SIEKEVITZ
The Rockefeller University

PAUL M. KRAEMER
University of California

ASSOCIATE EDITORS

JOHN W. ADAMSON
Veterans Administration Hospital
Seattle

CLAUDIO BASILICO
New York University

L. GOLDSTEIN
University of Colorado

H. GREEN
Massachusetts Institute of
Technology

KURT HIRSCHHORN
Mount Sinai School of Medicine

RU CHIH C. HUANG
The Johns Hopkins University

HERMAN M. KALCKAR
Harvard Medical School

R. S. KROOTH
Columbia University

I. LIEBERMAN
University of Pittsburgh

D. MARSLAND
Marine Biological Laboratories

GEORGE M. MARTIN
University of Washington
Seattle

D. MAZIA
University of California

M. L. MENDELSON
Lawrence Livermore Laboratory

DONALD METCALF
Walter and Eliza Hall Institute
Australia

P. G. W. PLAGEMANN
University of Minnesota

ASER ROTHSTEIN
The Hospital for Sick Children
Research Institute
Toronto

CLIFFORD STANNERS
The Ontario Cancer Institute

H. SWIFT
University of Chicago

H. M. TEMIN
University of Wisconsin

L. WARREN
University of Pennsylvania

L. WEISS
Roswell Park Memorial Institute

VOLUME 98

JANUARY, FEBRUARY, MARCH 1979

PUBLISHED BY

THE WISTAR INSTITUTE OF ANATOMY AND BIOLOGY

PHILADELPHIA, PA.

COPYRIGHT © 1979 BY
THE WISTAR INSTITUTE PRESS
All rights reserved

Contents

No. 1 JANUARY 1979

FREDERICK J. FULLER AND PHILIP I. MARCUS. Cell Surface-associated Ribonuclease Activities	1
PAUL R. MYERS. The Effects of Dopamine on Prostaglandin E ₁ -elicited Electrophysiological Changes in a Neuronal Somatic Cell Hybrid	11
JOSE A. MELERO. Isolation and Cell Cycle Analysis of Temperature-sensitive Mutants from Chinese Hamster Cells.....	17
DIETER PAUL AND HANS J. RISTOW. Cell Cycle Control by Ca ⁺⁺ -Ions in Mouse 3T3 Cells and in Transformed 3T3 Cells.....	31
BERNARDO S. VANDERHEIDEN. Purification and Properties of Human Erythrocyte Inosine Triphosphate Pyrophosphohydrolase	41
T. I. AHN AND K. W. JEON. Growth and Electron Microscopic Studies on an Experimentally Established Bacterial Endosymbiosis in Amoebae.....	49
OTTO P. VAN DIGGELEN, THOMAS F. DONAHUE AND SEUNG-IL SHIN. Basis for Differential Cellular Sensitivity to 8-Azaguanine and 6-Thioguanine.....	59
WILLIAM T. MELVIN, JULIAN F. BURKE, ALISON A. SLATER AND HAMISH M. KEIR. Effect of Amino Acid Deprivation on DNA Synthesis in BHK-21/C13 Cells	73
A. HARRY RUBIN AND DANIEL F. BOWEN-POPE. Coordinate Control of Balb/c3T3 Cell Survival and Multiplication by Serum or Calcium Pyrophosphate Complexes	81
WILLIAM NEGENDANK AND CALVIN SHALLER. Potassium-Sodium Distribution in Human Lymphocytes: Description by the Association-Induction Hypothesis.....	95
WILLIAM NEGENDANK AND GEORGE KARREMAN. Rate of Potassium-Sodium Exchange by Human Lymphocytes: Prediction of the Cooperative Adsorption Model.....	107
RÉAL LALLIER, MICHEL TRUDEL, CARLOS A. BRAILOVSKY AND VIJAI N. NIGAM. Binding of <i>Salmonella Minnesota</i> R-form Glycolipid mR595 to Rat Fibroblasts and Its Effect on Cell Metabolism and Cell Behaviour	113
NEAL ROSEN, JEANNE PISCITELLO, JONATHAN SCHNECK, RUTH J. MUSCHEL, BARRY R. BLOOM AND ORA M. ROSEN. Properties of Protein Kinase and Adenylate Cyclase-deficient Variants of a Macrophage-like Cell Line	125
A. HOLIAN, C. J. DEUTSCH, S. K. HOLIAN, R. P. DANIELE AND D. F. WILSON. Lymphocyte Response to Phytohemagglutinin: Intracellular Volume and Intracellular [K ⁺]	137
RICHARD J. PIETRAS AND CLARA M. SZEGO. Metabolic and Proliferative Responses to Estrogen by Hepatocytes Selected for Plasma Membrane Binding-sites Specific for Estradiol-17 β	145
BERNARD PESSAC, ARLETTE GIRARD AND FRANÇOISE ALLIOT. Studies on Inter-cellular Adhesion. III. Adhesion of Cells to Isotypic or Heterotypic Collecting Particles and Monolayers.....	161
KAZUHIRO NAGATA AND YASUO ICHIKAWA. Requirements for RNA and Protein Synthesis in the Induction of Several Differentiation-markers in a Myeloid Leukemia Cell Line	167

AKIRA NIWA, KATSUHIKO YAMAMOTO AND YOSIHIRO YASUMURA. Establishment of a Rat Hepatoma Cell Line which has Ornithine Carbamoyltransferase Activity and Grows Continuously in Arginine-deprived Medium	177
NANCY L. OLEINICK. The Initiation and Elongation Steps in Protein Synthesis: Relative Rates in Chinese Hamster Ovary Cells during and after Hyperthermic and Hypothermic Shocks	185
DEAN L. ENGELHARDT, GLORIA T.-Y. LEE AND JEFFREY F. MOLEY. Patterns of Peptide Synthesis in Senescent and Presenescent Human Fibroblasts	193
WEBSTER K. CAVENEE AND GEORGE MELNYKOVYCH. Elevation of HeLa Cell 3-Hydroxy-3-methylglutaryl Coenzyme A Reductase Activity by Glucocorticoids: Possible Relationship to the Cell Cycle	199
CHARLES W. CARLSON. Evidence for a High Molecular Weight Factor(s) in Serum which Increases Alkaline Phosphatase Specific Activity in HeLa	213
BRYAN M. TURNER, VIRGINIA S. TURNER AND KURT HIRSCHHORN. Metabolic Correction of Fucosidosis Fibroblasts by Human α -L-Fucosidase	225

Brief Communications

JEFFREY L. CLARK, JULIE RABE AND STUART M. ARFIN. Aminoacyl-tRNA Synthetase Mutants Degrade Protein at a Normal Rate	237
H. MICHIBATA AND R. HORI. The Accumulation of Manganese from the Environmental Medium by the Egg of <i>Oryzias latipes</i>	241
Guide for Authors	245

No. 2 FEBRUARY 1979

ANDREA J. TENNER AND IMMO E. SCHEFFLER. Lipid-Saccharide Intermediates and Glycoprotein Biosynthesis in a Temperature-sensitive Chinese Hamster Cell Mutant	251
JEFFREY M. HARMON, MICHAEL R. NORMAN, BETTY JO FOWLKES AND E. BRAD THOMPSON. Dexamethasone Induces Irreversible G ₁ Arrest and Death of a Human Lymphoid Cell Line.....	267
Z. FARFEL, S. KARLISH AND J. PRIVES. A Transient Increase in Amino Acid Transport Modulated by Insulin in Differentiating Muscle Cells	279
GENE P. SIEGAL, THOMAS J. QUINLAN, HAROLD L. MOSES AND MICHAEL J. GETZ. Frequency Differences between Nuclear and Polysomal Sequences of Poly(A)-containing RNA from Cultured AKR Mouse Embryo Cells	283
J. P. VELDHIJZEN, L. A. BOURRET AND G. A. RODAN. In Vitro Studies of the Effect of Intermittent Compressive Forces on Cartilage Cell Proliferation	299
ANGELO F. BORGHETTI, MARIAROSARIA TRAMACERE, GIUSEPPE PIEDIMONTE AND GUIDO G. GUIDOTTI. Amino Acid Transport in Chick Embryo Fibroblasts: Evidence for Transcriptional Regulation of Transport following Serum Addition	307
S. J. MOLNAR AND A. M. RAUTH. The Effect of Amino Acids on the Temperature Sensitive Phenotype of the Mammalian Leucyl-tRNA Synthetase Mutant <i>tsH1</i> and Its Revertants.....	315
S. J. MOLNAR, L. H. THOMPSON, D. J. LOFGREN AND A. M. RAUTH. Isolation and Characterization of Revertants of the Mammalian Temperature Sensitive Leucyl-tRNA Synthetase Mutant <i>tsH1</i>	327
ROBERT F. DIEGELMANN, I. KELMAN COHEN AND BARBARA J. MCCOY. Growth Kinetics and Collagen Synthesis of Normal Skin, Normal Scar and Keloid Fibroblasts In Vitro	341

PATRICIA A. HARPER AND PHILIP A. KNAUF. Comparison of Chloride Transport in Mouse Erythrocytes and Friend Virus-transformed Erythroleukemic Cells	347
THOMAS C. SMITH AND KIM D. VERNON. Correlation of the Effect of Ca^{+2} on Na^{+} and K^{+} Permeability and Membrane Potential of Ehrlich Ascites Tumor Cells.	359
ANNE W. HAMBURGER, MARY B. KIM AND SYDNEY E. SALMON. The Nature of Cells Generating Human Myeloma Colonies In Vitro.	371
C. NELSON SINBACK AND WILLIAM SHAIN. Electrophysiological Properties of Human Oviduct Smooth Muscle Cells in Dissociated Cell Culture.	377
C. RAY WILKINSON AND SYLVIA J. KERR. Selective Changes in tRNA Methyltransferase Activity in Confluent Monolayers of WI-38 Cells Stimulated to Proliferate	395
D. METCALF, G. R. JOHNSON AND T. E. MANDEL. Colony Formation in Agar by Multipotential Hemopoietic Cells.	401
ARNE T. HØSTMARK, JAN ALEXANDER, OLE GRØNNERØD, ROLF ASKEVOLD AND MONICA VON KRAEMER BRYN. Effect of a Brewer's Yeast Extract on Growth and Glucose Metabolism of Cells in Culture.	421
JOHN MORROW, DOUGLAS M. STOCO AND JOE A. FRALICK. The Requirement of DNA Synthesis for the Induction of Alkaline Phosphatase by Bromodeoxyuridine in a Derivative of the HeLa Cell Line	427
<i>Brief Communications</i>	
MICHAEL R. DUNCAN, ROBERT T. DELL'ORCO AND K. D. KIRK. Superoxide Dismutase Specific Activities in Cultured Human Diploid Cells of Various Donor Ages	437

No. 3 MARCH 1979

JOHN M. LEHMAN AND KATRINA TREVOR. Karyology and Tumorigenicity of a Simian Virus 40-transformed Chinese Hamster Cell Clone	443
PRASAD S. SUNKARA, MARY B. PARGAC, KENJI NISHIOKA AND POTU N. RAO. Differential Effects of Inhibition of Polyamine Biosynthesis on Cell Cycle Traverse and Structure of the Prematurely Condensed Chromosomes of Normal and Transformed Cells	451
THOMAS D. STAMATO AND DAVID PATTERSON. Biochemical Genetic Analysis of Pyrimidine Biosynthesis in Mammalian Cells. II. Isolation and Characterization of a Mutant of Chinese Hamster Ovary Cells with Defective Dihydroorotate Dehydrogenase (E.C. 1.3.3.1) Activity	459
REBECCA M. PRUSS AND HARVEY R. HERSCHMAN. Cholera Toxin Stimulates Division of 3T3 Cells.	469
ROBERT J. SMITH AND JAMES M. PHANG. The Importance of Ornithine as a Precursor for Proline in Mammalian Cells	475
R. J. JULIANO AND E. GAGALANG. The Effect of Membrane-fluidizing Agents on the Adhesion of CHO Cells	483
W. ROSS ALLEN, MARIT NILSEN-HAMILTON, RICHARD T. HAMILTON AND DENIS GOSPODAROWICZ. Serum-dependent Regulation of α -Aminoisobutyric Acid Uptake in Bovine Granulosa Cells	491
PIERRE SCHELLING, DETLEV GANTEN, GEORG SPECK AND HANS FISCHER. Effects of Angiotensin II and Angiotensin II Antagonist Saralasin on Cell Growth and Renin in 3T3 and SV3T3 Cells	503
DOUGLAS C. DOOLEY AND HARVEY L. OZER. Ordered Replication of DNA Sequences: Synthesis of Mouse Satellite and Adjacent Main Band Sequences	515

B. GLIMELIUS, B. NORLING, B. WESTERMARK AND A. WASTESON. A Comparative Study of Glycosaminoglycans in Cultures of Human, Normal and Malignant Glial Cells	527
WILLIAM NEGENDANK AND CALVIN SHALLER. Fast and Slow Fractions of K ⁺ Flux in Human Lymphocytes.....	539
R. P. PERRY, D. E. KELLEY, U. SCHIBLER, K. HUEBNER AND C. M. CROCE. Selective Suppression of the Transcription of Ribosomal Genes in Mouse-Human Hybrid Cells	553
JOFFRE B. BAKER, ROBERT L. SIMMER, KEVIN C. GLENN AND DENNIS D. CUNNINGHAM. Glucocorticoids Enhance the Mitogenic Action of Insulin in Serum-free Cultures of Chick Embryo Cells	561
J. W. POLLARD AND C. P. STANNERS. Characterization of Cell Lines Showing Growth Control Isolated from Both the Wild Type and a Leucyl-tRNA Synthetase Mutant of Chinese Hamster Ovary Cells.....	571
NINA MAYOREK, ARIE PINSON AND MICHAEL MAYER. Intracellular Proteolysis in Rat Cardiac and Skeletal Muscle Cells in Culture	587
JAMES R. SMITH AND KAREN I. BRAUNSCHWEIGER. Growth of Human Embryonic Fibroblasts at Clonal Density: Concordance with Results from Mass Cultures.....	597
S. RAMAGOPAL AND A. MARCUS. RNA Synthesis in Growing and Stationary Cells of a Culture of Scarlet Rose. Disproportionate Synthesis of Ribosomal Subunits in the Stationary State.....	603
ROBERT J. FALLON, RODY P. COX AND NIMAI K. GHOSH. Induction of Human Choriogonadotropin and Follitropin in HeLa Cell Cultures by Hyperosmolality	613
JOHN M. PAWELEK. Evidence Suggesting That a Cyclic AMP-Dependent Protein Kinase Is a Positive Regulator of Proliferation in Cloudman S91 Melanoma Cells.....	619
MICHAEL L. ZIEGLER AND RICHARD L. DAVIDSON. The Effect of Hexose on Chloramphenicol Sensitivity and Resistance in Chinese Hamster Cells....	627
<i>Brief Communications</i>	
LEAH ANN LIPSICH, JOSEPH J. LUCAS AND JOSEPH R. KATES. Separation of Cytoplasts and Whole Cells Using Density Gradients of Renografin	637
Index to Volume 98.....	643